

**We Claim:**

1           1.    A method for use in at least a portion of a wireless  
2   communication system in which downlink signals are communicated  
3   from at least one of one or more base stations to respective ones of a  
4   plurality of terminals, and uplink signals are communicated to at least  
5   one of one or more base stations from respective ones of a plurality of  
6   terminals, the method comprising the steps of:

7           using dirty paper coding to compensate for interference among  
8   the downlink signals; and

9           using multi-user detection to compensate for interference among  
10   the uplink signals.

11           2.   The method of claim 1, wherein the terminals are mobile  
12   terminals.

13           3.   The method of claim 1, wherein:  
14           the compensation for the downlink signals is performed using an  
15   order of the terminals that defines which terminals' downlink signals  
16   are used to compensate for interference in which other terminals'  
17   downlink signals; and

18           the compensation for the uplink signals is performed using a  
19   second order of the terminals that defines which terminals' uplink  
20   signals are used to compensate for interference in which other  
21   terminals' uplink signals.

22           4.   The method of claim 3, wherein the second order is based  
23   on at least one different criterion than the first order.

1           5.    The method of claim 3, wherein the first order is based on  
2 at least one of the following criteria:

3           the order in which the terminals of the plurality initiated a  
4 communication session with the one or more base stations;

5           the reverse of the order in which the terminals of the plurality  
6 initiated a communication session with the one or more base stations;

7           the respective amounts of data to be transmitted between the  
8 terminals and the one or more base stations; and

9           randomness.

1           6.    The method of claim 3, wherein the second order is based  
2 on at least one of the following criteria:

3           the order in which the terminals of the plurality initiated a  
4 communication session with the one or more base stations;

5           the reverse of the order in which the terminals of the plurality  
6 initiated a communication session with the one or more base stations;

7           the respective amounts of data to be transmitted between the  
8 terminals and the one or more base stations; and

9           randomness.

1           7.    The method of claim 3, wherein the first order is defined  
2 by:

3           a) identifying an individual one of the terminals for which a  
4 certain operating parameter value would be optimal in the absence of  
5 interference from the other terminals in the plurality;

6           b) assigning the individual terminal in step a) to have an index of  
7 1;

8           c) identifying another individual one of the terminals for which  
9 the certain operating parameter value would be optimal in the

presence of interference from the assigned terminals in the plurality and in the absence of interference from unassigned terminals in the plurality;

d) assigning the individual terminal in step c) to have the next unassigned index in the order; and

e) repeating steps c) and d) until all of the terminals in the plurality are assigned an index in the order.

8. The method of claim 7, wherein:  
the operating parameter comprises data rate; and  
the optimal operating parameter value is the data rate having the highest magnitude of the data rates of the respective terminals.

9. The method of claim 8, wherein at least one other operating parameter of the terminals is fixed.

10. The method of claim 3, wherein the second order is defined by:

a) identifying an individual one of the terminals for which a certain operating parameter value would be optimal in the absence of interference from the other terminals in the plurality;

b) assigning the individual terminal in step a) to have an index of one;

c) identifying another individual one of the terminals for which the certain operating parameter value would be optimal in the presence of interference from the assigned terminals in the plurality and in the absence of interference from unassigned terminals in the plurality;

- 13           d) assigning the individual terminal in step c) to have the next yet  
 14 unassigned index in the order; and  
 15           e) repeating steps c) and d) until all of the terminals in the  
 16 plurality are assigned an index in the order.

1           11. The method of claim 10, wherein:  
 2           the operating parameter comprises data rate; and  
 3           the optimal operating parameter value is the data rate having the  
 4 highest magnitude of the data rates of the respective terminals.

1           12. The method of claim 11, wherein at least one other  
 2 operating parameter of the terminals is fixed.

1           13. The method of claim 3, wherein, in the portion, signals are  
 2 communicated between at least one of the one or more base stations  
 3 and a respective one of a second plurality of terminals, and the method  
 4 further comprises the step of:

5           using a compensation scheme to compensate for interference  
 6 among the signals from the at least one of the one or more base  
 7 stations to the second plurality of terminals.

1           14. The method of claim 13, wherein the other compensation  
 2 scheme comprises multi-user detection.

1           15. The method of claim 3, wherein, in the portion, signals are  
 2 communicated between at least one of the one or more base stations  
 3 and a respective one of a second plurality of terminals, and the method  
 4 further comprises the step of:

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	